Architected with 144-layer, TLC, Intel® 3D NAND technology, the Intel® SSD D7-P5510 offers optimized performance and capacity for all-flash arrays and is designed to advance IT efficiency and data security. The Intel SSD D7-P5510 includes an Intel PCIe 4.0 controller and firmware that brings low latency, enhanced management capabilities, scalability and critical new NVMe features for Enterprise and Cloud environments.

Available in the U.2 15mm form factor, this SSD is offered at 3.84TB and 7.68TB with write endurance up to 1 drive write per day (DWPD).

Improve performance with lower latency
The Intel SSD D7-P5510 delivers predictably fast high performance and can greatly accelerate all-flash arrays. The performance-optimized D7-P5510 brings up to 2x higher sequential read performance, 1 50% lower latencies and a 50% increase in mixed workload IOPs (70% read, 30% write) 3 compared to the previous-generation Intel SSD.

A new TRIM architecture further improves the performance on real life workload where dataset management commands are used. Optimized TRIM architecture now runs as a background process without interference to workloads, improving performance and QoS during concurrent TRIMs. The TRIM process is improved with reduced write amplification that helps drives meet their endurance goal.

Firmware enhancements for drive performance, IT efficiency, data security, and manageability
The Intel SSD D7-P5510 include numerous firmware enhancements specifically designed to improve IT efficiency and data security in an increasingly data-centric world.

Dynamic multiple namespaces enhance runtime provisioning and storage management. Overprovision drive with single smaller namespace to improve endurance and random write performance. 4

• Expanded LBA format support provides flexibility to host software to pass meta data and protection information along with payload data. Intel SSD D7-P5510 supports VSS with the following sector sizes: 512/520/4096/4104/4160B.
• Scatter gather list (SGL) improves performance by removing the need for data alignment at the host.
• Enhanced SMART monitoring, which reports drive health status without disrupting I/O data flow using an in-band mechanism and out-of-band access.
• Device self-test improves customer experience by ensuring devices are operating as expected. Host system can request the storage device (SSD) to perform tests to ensure it is functioning properly including SMART check, volatile memory backup, NVM integrity, drive life.

• Telemetry makes a wide range of stored data accessible and includes intelligent error tracking and logging. This increases the reliability of finding and mitigating issues and supports accelerated qualification cycles—all of which result in increased IT efficiency.

• Additional security features like TCG Opal 2.0, Configurable Namespace Locking, sanitize and format NVM are supported.

• A power-loss imminent (PLI) protection scheme with built-in self-testing guards against data loss if system power is suddenly lost. Coupled with an industry-leading end-to-end data path protection scheme, PLI features also enable ease of deployment into resilient data centers where data corruption from system-level glitches is not tolerated.

NAND technology industry leader

Intel's 144-layer 3D NAND technology delivers industry-leading areal density and data retention, enabling enterprise customers to confidently scale storage arrays to meet their growing needs. The swift adoption of software-defined and hyperconverged infrastructures increases the requirement to maximize efficiency, revitalize existing hardware, and increase server agility—all while maintaining operational reliability.

Top enterprise server manufacturers have responded by openly embracing PCIe/NVMe-based SSDs with scalable performance, low latency, and continuous innovation. Meeting the demand of increasingly I/O-intensive workloads, including AI and Analytics, has become a core element for any enterprise strategy.